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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/086,617      | 02/28/2002  | Kun-Tsan Wu          |                     | 1920             |

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EXAMINER

PAK, SUNG H

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

CH

|                              |                               |                           |  |
|------------------------------|-------------------------------|---------------------------|--|
| <b>Office Action Summary</b> | Applicati n N .<br>10/086,617 | Applicant(s)<br>WU ET AL. |  |
|                              | Examiner<br>Sung H. Pak       | Art Unit<br>2874          |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_ .
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4 is/are allowed.
- 6) ☒ Claim(s) 5-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_ .
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ . | 6) <input type="checkbox"/> Other: ____ .                                   |

**DETAILED ACTION**

***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 9-17 are are rejected under 35 U.S.C. 102(e) as being anticipated by Wang (US 6,404,943 B1).

Wang discloses an optical device with all the limitations set forth in the claims, including: at least two input fibers and at least two output fibers (Fig. 2B); at least two waveguides, each comprising 2 parallel reflecting surfaces (reflecting surfaces being interface between the core and the cladding portions- one surface may be called “main” and the other may be called “secondary” reflecting surfaces) (Fig. 2B); wherein the light beam from the input fiber is reflected at least twice off the “main” and “secondary” reflecting surface then are output by the output fiber (Fig. 2B); pair of input and output ports are arranged at equal intervals along a circumference surrounding a movable

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switch element (Fig. 2B); wherein when switching element is not interfering with the optical path of the input waveguide, the light beam is transmitted to the output waveguide that is arranged diametrically (Fig. 2A); wherein when the switching element is in the optical path, the light from the input waveguide is output to the neighboring output waveguide via reflecting surfaces (Fig. 2B).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US 6,404,943 B1).

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Wang discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not teach the use of collimators aligned with input fibers. However, the use of collimators with input or output fibers is well known and commonly taught in the fiber optic communications art. Fiber optic collimators provide a well-known advantage of conditioning input or output light beams for efficient waveguide coupling, and reduces transmission errors. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Wang device to have collimators aligned with input fibers.

***Allowable Subject Matter***

Claims 1-4 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: An optical switch for switching light signals coming from three input fibers to three output fibers is well known in the art. However, none of the prior art fairly teaches or suggests such an optical switch having, inter alia, a movable, three-surface mirror and three stationary reflectors each mounted opposite each reflecting surface of the three-surface mirror, wherein the movable three-surface mirror is movable between three positions, wherein when the light signal is transmitted from the input fiber, either the light gets transmitted directly to the corresponding output fiber, or the light gets reflected between one reflecting surface of the three-surface mirror and the reflecting surface of the mounted reflector before it gets transmitted to the output fiber.

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**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Liao et al (US 2003/0081884), Liao et al (US 6,587,614), Zhang (US 2002/0146199), Tsai (US 5,642,446) and Chen et al (US 2003/0113057) disclose optical switches with movable reflectors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (703) 308-4880. The examiner can normally be reached on Monday - Thursday : 6:30am-5:00pm.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Sung H. Pak  
Examiner  
Art Unit 2874

sp  
August 7, 2003

HEMANG SANGHAVI  
PRIMARY EXAMINER